

REMARKS:

Upon entry of the instant amendment, claims 3-5, 7, 9, 11, and 13-19 will be pending. New claims 16-19 have been added. No new matter has been introduced. Applicant respectfully requests an action on the merits.

In the Office Action dated November 26, 2003 (hereinafter referred to simply as the "Office Action"), the Examiner objected to the Abstract of the disclosure for exceeding 150 words. In response, the Abstract has been amended herein (by providing a replacement paragraph hereinabove) so as to fall within the required length limitation. As such, the Applicant respectfully requests that the objection to the Abstract be withdrawn.

In the Office Action (at p. 2), the Examiner accepted the drawings submitted along with the Preliminary Amendment dated October 18, 2001, with an exception, stating that:

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following process not mentioned in the description:

- Figure 1 depicts communication directly from the remote transceiver (70) [sic: (80)] to the host controller (40) avoiding the transceiver (70) connected to that controller.
- Because controller (40) requires transceiver (70) to communicate, the Examiner is proceeding with the understanding that connection 80 → 40 will be replaced with a connection from 70 → 40.

The Examiner also required submission of a proposed drawing correction, corrected drawings, or appropriate amendment to the specification in reply to the Office Action. In response, the Applicant submits herewith corrected replacement drawing sheet 1/3 (as opposed to a proposed drawing correction) containing Fig. 1, wherein connection 80 → 40 has been

replaced with a connection from 70 → 40. As such, it is respectfully requested that the objection to the drawings be withdrawn.

The specification (at pp. 16-17) has also been amended herein to correct the typographical error noted by the Examiner. As such, the Applicant respectfully requests that the objection to the specification be withdrawn.

In the Office Action, the Examiner rejected claims 3-5, 7, 9, 11, and 13-14 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,086,385 to Launey et al. (hereinafter referred to as "Launey"), in view of U.S. Patent No. 5,737,485 to Flanagan et al. (hereinafter referred to as "Flanagan").¹ In addition, the Examiner rejected claim 15 under 35 U.S.C. § 103(a) as being unpatentable over Launey in view of Flanagan and further in view of Seidl (hereinafter referred to as "Seidl"). These rejections are respectfully traversed.

The present invention is directed to an apparatus and method for sending output information to a remote terminal in response to an input signal of a sound. The apparatus has a first memory block that stores characteristic data representing characteristics of various sounds. There is also a second memory block that stores various items of output information associated with the characteristic data of the various sounds. The apparatus further has an input device that collects a sound and provides an input signal of the collected sound. An analyzer device extracts

¹ It is noted that the Flanagan reference, U.S. Patent No. 5,737,485, although cited in the body of the Office Action, does not appear in the "Notice of References Cited" (Form PTO-892) that was included with the Office Action. Form PTO-892 cites U.S. Patent No. 5,675,709 to Chiba twice, and it appears that one of these citations was meant to be to the Flanagan reference. The Applicant also notes that "Che *et al* (U.S. Patent 5,737,485)", which is included in the list of "prior art made of record and not relied upon" at p. 10 of the Office Action, appears to have been misplaced as this is actually the Flanagan reference, which was relied upon in the rejection of the claims.

characteristic data from the input signal of the collected sound. A controller device then operates according to the extracted characteristic data for addressing the first memory block and the second memory block to identify the item of the output information corresponding to the collected sound. The apparatus further has a transmitter device that transmits the identified item of the output information to the remote terminal.

According to the instant invention, a new sound and a corresponding item of output information can be registered to update the first memory block and the second memory block. When updating the output information, the controller device registers the extracted new characteristic data into the first memory block and registers the corresponding item of the output information into the second memory block. In addition, the user is able to command the operation of the information announcing apparatus from a remote location by using the remote terminal to select and set the operation mode of the apparatus.

In another embodiment, the apparatus contains a plurality of spatially-distributed input devices, such as microphones, which are configured to collect a sound from a single source and generate respective input signals of the same sound. Given the multiple input devices, the invention also includes the capability to detect and identify the location of a sound source. Here, a detector device processes the (plurality of) input signals provided by the (plurality of) spatially-distributed input devices to detect the source location of the sound. At least one analyzer device extracts characteristic data from at least one of the input signals of the collected data, and the controller device operates according to the extracted characteristic data to identify the item of the output information (e.g., from the second memory block) that corresponds to the

collected sound. The identified item of the output information is then transmitted, along with the detected source location of the sound, to the remote terminal.

Also included is a canceler device. Here, specific items of sounds which should not be detected by the apparatus are initially stored. Then, during operation, if an unwanted sound is received by one of the plurality of input devices, the canceler device cancels the transmission of the output information, which may include the sound source location.

Claims 3-5, 7, 9, 11, and 13-14 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Launey, in view of Flanagan. However, it is respectfully submitted that Launey and Flanagan do not, either individually or in combination, disclose the inventions of claims 3-5, 7, 9, 11, and 13-14.

Launey discloses an automation system to control various appliances and subsystems within a home or commercial space. More specifically, Launey is directed to a system and method for operating various appliances through different kinds of input devices, including a microphone. Thus, in Launey, an input is used to trigger an automatic action in an appliance as the output.

In rejecting claim 3, the Examiner asserts, *inter alia*, that Launey “(col. 15, lines 37-43) also reads on the feature of *a transmitter device that transmits the identified one of the items of the output information to the remote terminal* (col. 7, lines 57-62) *together with the detected source location of the sound* (col. 15, line 44).” (Emphasis in original).

Claim 3 recites, *inter alia*:

a plurality of input devices that are spatially distributed to collect the sound from a source location, and that respectively provide input signals of the same sound;

a detector device that processes the input signals provided from the spatially distributed input devices to detect the source location of the sound;

an analyzer device that extracts characteristic data from at least one of the input signals of the collected sound;

a controller device that operates according to the extracted characteristic data for addressing the first memory block and the second memory block to identify one of the items of the output information corresponding to the collected sound; and

a transmitter device that transmits the identified one of the items of the output information to the remote terminal together with the detected source location of the sound. (Emphases added).

Although Launey discloses “multiple voice recognition locations” (*see* col. 15, line 37), there is no disclosure therein of a plurality of input devices in different locations, wherein all of the input devices are configured to collect a single sound from the same source location, and then provide input signals of the same sound emitted from the source location. Moreover, there is no disclosure whatsoever of identifying and transmitting the detected source location of the sound to a remote terminal. Thus, although the disclosure of Launey may arguably include the use of a plurality of microphones as input devices, each input device is used to activate a separate appliance as an output.

Therefore, as an initial matter, it is respectfully submitted that Launey does not constitute relevant art vis-à-vis the pending claims, each of which recites detection/identification and transmission of the source location of the sound. Put another way, the very point of this aspect of the present invention is to identify the single source location of the input sound that is collected, and to provide this information for use along with the output information that corresponds to the collected sound.

In sharp contrast, the point of the Launey invention (as the title of the patent implies) is to control one of a plurality of appliances by providing one or more inputs. In other words, as aptly recognized by the Examiner, even if/when Launey uses a plurality of input devices, “these devices are intended to provide reception coverage for sounds from *multiple sources* and so do not apply on the feature of *collecting from a single source*.” See Office Action, p. 5. (Emphases in original and added). Given Launey’s intention as noted above, there is no disclosure, teaching, or even suggestion in Launey for identifying, much less transmitting, the source location of any source, let alone a single source common to a plurality of inputs. Launey simply has no use for this information and, as will be discussed further below, this is the very reason why Launey does not teach (and the reason why the Examiner has not cited Launey for teaching) a detector device that detects the source location of the sound. As such, the Applicant respectfully reiterates that Launey is not relevant prior art vis-à-vis the instant invention.

Nevertheless, even if Launey were, *arguendo*, relevant, it fails to disclose the element for which it has been cited by the Examiner. Again, the Examiner contends that “a transmitter device that transmits the identified one of the items of the output information to the remote terminal together with the detected source location of the sound” is shown in Launey at col. 7, lines 57-62, in conjunction with col. 15, line 44. However, although the former describes transmission/reception “of data or instructions from within the home environment”, the latter recites “multiple voice response locations with remote speakers 66 which provide spoken information and instructional cues to the user.” See Launey, col. 15, lines 44-46.

First, as shown in Figure 1 of Launey, the above-quoted passage simply relates to locations where remote speakers 66 are located. There is no disclosure or teaching here of

detecting the source location of the sound. Second, even if, for some unexplained reason, the source of the sound is detected, contrary to the Examiner's assertion, there is absolutely no disclosure, teaching, or suggestion in the cited section of Launey (or anywhere else in Launey for that matter) of transmitting "the detected source location of the sound" along with the output information. As such, it is respectfully submitted that claim 3 distinguishes over, and therefore is not obvious in light of, the Launey reference.

Recognizing the shortcomings of Launey, the Examiner cites Flanagan for the proposition that:

The microphone arrays and neural networks for speech/speaker recognition systems of Flanagan et al (2 in figure 1) reads on the feature of a plurality of input devices that are spatially distributed to collect the sound from a source location, and that respectively provide input signals of the same sound and (column 9 lines 48-50) a detector device that processes the input signals provided from the spatially distributed input devices to detect the source location of the sound and including an analyzer device (4 in figure 1) that extracts characteristic data from at least one of the input signals of the collected sound (16 in figure 1). See Office Action, p. 6. (Emphases in original).

Flanagan is directed to a neural network that is trained to transform distant-talking "cepstrum coefficients", i.e., speech features, derived from a microphone array receiving speech from a speaker distant therefrom, into a form that is to be substantially similar to close-talking cepstrum coefficients that would be derived from a microphone close to the speaker, so as to provide robust hands-free speech and speaker recognition in adverse environments with existing speech and speaker recognition systems which have been trained on close-talking speech. Thus, the invention in Flanagan aims to capture speech from a distant speaker and provide an output that sounds substantially similar to that which would have been obtained had the speaker been "close-talking".

In this regard, the system of Flanagan incorporates a microphone array, a neural network, and a speech recognizer. The latter is trained on close-talking speech by having a speaker speak into a microphone from a distance of less than twenty inches. *See* Flanagan, col. 3, lines 53-54. With this set-up, speech features are extracted from the microphone array (i.e., array speech) and inputted into the input nodes of the neural network. Similarly, speech features from the output of the single microphone (i.e., close speech) are extracted and inputted to the output nodes of the neural network. The neural network is then used to transform the cepstrum coefficients from the microphone array to those appropriate to close-talking so as to approximate matched training and testing conditions. In this way, the invention aims to provide a recognition accuracy for a distant-talking speaker in a noisy/reverberant environment which is comparable to that obtained in close-talking, quiet laboratories.

Again, the Applicant notes that, as an initial matter, Flanagan does not constitute relevant art vis-à-vis the pending claims, each of which recites detection/identification and transmission of the source location of the sound. That is, the very point of this aspect of the present invention is to identify the single source location of the input sound that is collected, and to provide this information for use along with the output information that corresponds to the collected sound.

In sharp contrast, the Flanagan invention is not at all concerned with the source location of the sound, let alone detection and/or transmission of information related thereto. In fact, the very point of Flanagan is to normalize, or neutralize, the source such that, regardless of the location of the source, the output will mimic an output that would be produced if the input were that of a close-talking input. In short, Flanagan teaches away from every single invention

covered by the pending claims of the instant application. As such, the Applicant respectfully submits that Flanagan is not relevant prior art vis-à-vis the instant invention.

The Applicant also notes that both Launey and Flanagan are related to applications where the “source” is already known, i.e., the speaker in each of the references is the source. Thus, there is no need, or use, in either Launey or Flanagan for identifying the “source” of the input information and, as such, there is not, and there cannot be, any disclosure in these references of transmission of output information “together with the source location of the sound”.

Nevertheless, even if Flanagan were, *arguendo*, relevant, Launey and Flanagan disclose completely different systems with vastly disparate applications. More specifically, whereas Launey is directed to multiple-source inputs to control multiple appliances (as outputs), Flanagan is directed to single inputs to provide corresponding normalized outputs of the same input, without providing any additional useful output information, let alone control information, or information relating to source location.² As such, it is respectfully submitted that the Launey and Flanagan references cannot properly form the basis of a 35 U.S.C. § 103(a) rejection as there is no suggestion whatsoever that the two references may be combined. *See, e.g., In re Jones*, 958 F.2d 347, 351, 21 USPQ2d 1941, 1943-44 (Fed. Cir. 1992) (“Before the PTO may establish *prima facie* obviousness, there must be some suggestion for doing so, found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art.”).

² In fact, the only thing that Launey and Flanagan appear to have in common is that neither reference has any use for, and as such fails to disclose, teach, or even remotely suggest detection/identification and transmission of source location for an input sound.

Still, even if the two references could properly be combined, it is respectfully submitted that Flanagan does not rectify the shortcomings of Launey. First, the cited section of Flanagan provides that:

In alternative embodiments of the invention, multiple neural networks 4, each designated for a particular location in an enclosure, may be used to handle a moving talker 10. Also, more sophisticated microphone arrays 2 with signal processing for matched-filtering, multiple beamforming, and automatic source location, may be used.

Therefore, although the invention of Flanagan may provide means for tracking a position of a moving talker by microphone array during the course of the speech recognition, it never detects, in order to transmit, the sound source location as meaningful information.

Second, even if such a detection/identification function were performed in Flanagan, the latter still does not alleviate the complete absence from both references of transmitting the source location information to a remote terminal. As mentioned before, contrary to the Examiner's assertion, Launey is completely devoid of this feature. On the other hand, forcing this feature onto the invention disclosed in Flanagan would only be nonsensical as the latter has nothing to do with transmission of any information, much less source location information, to any remote terminal.

In light of the above, it is respectfully submitted that the cited references do not, either individually or in combination, render claim 3 obvious. In addition, since claims 4, 5, and 7 depend, either directly or indirectly, from claim 3, it is respectfully submitted that these claims also distinguish over the cited references. As such, the Applicant respectfully requests that the rejections as to claims 3-5 and 7 be withdrawn as these claims are believed to be in condition for allowance.

Similarly, since independent claims 9, 11, 13, and 14 contain limitations that are similar to claim 3, it is respectfully submitted that these claims also distinguish over the cited references for at least the same reasons as were discussed above with respect to claim 3. As such, the Applicant respectfully requests that the rejections as to claims 9, 11, 13, and 14 be withdrawn as these claims are believed to be in condition for allowance.

The Examiner also rejected claim 15 under 35 U.S.C. § 103(a) as being unpatentable over Launey in view of Flanagan and further in view of Seidl. First, inasmuch as claim 15 is dependent upon claim 14, it is respectfully submitted that claim 15 distinguishes over the combination of Launey and Flanagan for the same reasons as those set forth above with respect to claim 14 (and claim 3).

Second, it is doubtful that Seidl is relevant art, and that, even if it were relevant, it could properly form the basis of a 35 U.S.C. § 103(a) rejection, as there is no suggestion whatsoever that this reference may be combined with Launey and Flanagan. *See, e.g., In re Jones*, 958 F.2d 347, 351, 21 USPQ2d 1941, 1943-44 (Fed. Cir. 1992) *supra*.

More specifically, Seidl discloses a system whereby a user can “[c]ontrol any X-10 ‘unit’ (lights, appliances, stereo, TV, etc.) in [one’s] home right from [one’s] computer screen”. *See* Seidl, p. 3. The reference explicitly provides that manual computer interface, rather than speech recognition, is to be used in conjunction with the system. *See, e.g.,* Seidl, p. 3: “The following is a summary of the major features you have at your fingertips (or your mouse tips!) with the Lighthouse-software.” That is, whereas Launey and Flanagan at least relate to the use of a sound as input, the Seidl reference has nothing to do with, and in fact teaches away from, such an input. Thus, the system of Seidl is keyboard/mouse operated, rather than, e.g., voice activated.

Third, even if, *arguendo*, the three references could be combined, Seidl does not rectify the shortcomings of the combination of Launey and Flanagan with respect to the base claim (as discussed above in detail in connection with claim 3).

Fourth, even if Seidl did, *arguendo*, rectify the above-mentioned shortcomings, the additional limitations recited in claim 15 are still not disclosed, taught, or suggested by Seidl. More specifically, the Examiner states that:

Seidl (last page 8 of the Lighthouse excerpts) reads on the feature of *motion picture and combinations thereof* with their product in which the images change to reflect the operation of the devices, such that it would have been obvious to a person of ordinary skill in the art of speech signal processing at the time the invention to apply the method/teachings of Seidl to the device/method of Launey et al & Flanagan et al so as to reflect the actual state of the device by providing the element of *motion* to the pictures disclosed by Launey et al such that [sic], with the figures 10c-d (where the hands of the clock would move in accord with a setting by voice), figures 10e-f (where the moon phase would be expected to move as the time is set) and figures 12c-12f (where the symbols for lights, screen and etc. change as is done by Seidl). See Office Action, pp. 9-10; emphases in original.

To begin with, as has been recognized by the Examiner, there is no disclosure or teaching in Seidl of “motion picture and combinations thereof”. As such, it appears that the only way in which a rejection could be made based on this reference would be by engaging in hindsight, whereby certain features of Seidl are combined with certain features of Launey in order to fit the claimed invention, even though it is obvious from Seidl that the reference (which is dated 1993) never even contemplated the mode of operation attributed to it by the Examiner.

Moreover, the Applicant respectfully submits that, if the Examiner’s assertion were correct, then literally no other invention which involves sound as input, and a display as output, would ever be patentable because the combination of Seidl and Launey would presumably render

any such combination unpatentable. Again, it is believed that such a result would only be possible, if at all, by engaging in hindsight.

For all of the above reasons, the Applicant respectfully submits that claim 15 distinguishes over the cited references and, as such, is in condition for allowance.

New claims 16-19 have been added herein. The new claims do not introduce any new matter, and support therefor can be found in the specification, claims, and drawings as originally filed. Specifically, claim 16 depends from claim 3, claim 17 depends from claim 9, claim 18 depends from claim 11, and claim 19 depends from claim 13. It is respectfully submitted that new claims 16-19 distinguish over the prior art, and are therefore in condition for allowance, for at least the same reasons as were discussed with respect to claims 3, 9, 11, and 13, respectively.

Based on the above discussion, it is respectfully submitted that the cited references do not, individually or in combination, render any of the pending claims obvious. Thus, it is respectfully requested that the rejection as to all pending claims be withdrawn.

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It is believed that claims 3-5, 7, 9, 11, and 13-19 are in condition for allowance, and a favorable action is respectfully requested. If, for any reason, the Examiner finds the application other than in condition for allowance, the Examiner is requested to call one of the undersigned attorneys at the Los Angeles, California telephone number (213) 488-7100 to discuss the steps necessary for placing the application in condition for allowance.

Respectfully submitted

PILLSBURY WINTHROP LLP

Date: May 25, 2004

By: 

Keyvan Davoudian
Registration No. 47,520
Attorney for Applicant(s)

Date: May 25, 2004

By: 

Roger R. Wise
Registration No. 31,204
Attorney for Applicant(s)

PILLSBURY WINTHROP LLP
725 South Figueroa Street, Suite 2800
Los Angeles, CA 90017-5406
Telephone: (213) 488-7100
Facsimile: (213) 629-1033